A LIVABLE ENVIRONMENT FOR WILDLIFE IS QUALITY ENVIRONMENT FOR MAN

Montana Outdoors

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FORAGE FIRES

By Reuel Janson

A huge forest fire, out of control, is a terrifying thing. Its draft creates hurricane-force winds which may snap large tree trunks in two, or tear whole trees out by the roots and hurl them through the air. Its terrific heat sears all life and leaves a scene of black desolation. The immediate effect on wildlife may be devastating. However, out of the ashes often arises a game paradise not previously possible under the dense forest canopy.

All wildlife species need food, and most of them can not obtain food from tall trees. Deer and elk require grasses, forbs (weeds) and browse (low-growing shrubs) which thrive in sun-lit openings, but die out in the shade of timber stands.

The early explorers in western Montana found game abundant in the open valleys, but scarce in the heavily-timbered mountains. Settlement of the valleys confined deer and elk to the mountains. As a result of restricted range, and unrestricted hunting, both deer and elk became scarce during the early part of this century.

Fortunately, for the game, early settlers were careless with fire, and they did not have effective fire control equipment. As a result large areas were swept by conflagrations. Some of the big fire years were 1889, 1910, 1919 and 1934. Gradually on the many thousands of acres laid waste by fire, palatable grasses, sedges, forbs and browse plants developed, creating a forage bonanza for deer and elk on both summer and winter ranges. Under the protection of restricted hunting, beginning about 1910, game populations rapidly expanded to fill the newly created ranges. Deer and elk populations probably reached their peak on some western Montana ranges as early as the mid-1930's. They maintained a high population in some areas until the mid-1950's before a noticeable decline occurred. The primary cause of the decline was a reduction in forage, particularly on winter ranges. It may be argued that liberal hunting seasons reduced the herds. This may be true, but reduction by hunting was a secondary cause, made necessary by the shrinking food supply. From 1935 to 1955 more deer died of starvation than were killed by hunters. Heavy winter losses of elk also occurred in some areas, particularly the South Fork of the Flathead.

Cow elk feeding on an old burn area now in the stage of browse production. U.S. Forest Service photo.

Three natural processes collaborate with each other to reduce the food supply. One of these is overuse and depletion of food plants on winter ranges by the deer and

elk themselves. Another is the tendency of tall browse plants to grow out of reach of game animals. The third, and most far-reaching, is nature's relentless process called "plant succession" which gradually replaces the grasses, forbs and shrubs with coniferous timber. Unless this process is occasionally interrupted, many of our game range areas and the majority of the deer and elk that depend on them are doomed.

Wild-fire, in early times, was the chief agent which interrupted plant succession and maintained or created the necessary openings in the forest canopy. In our modern economy, wild-fire is too wasteful, and is quickly subdued by efficient control methods. As a result, the game ranges which were created by forest fires 35 to 80 years ago are growing up to trees, and new "burns" are too small to replace them.

If we are to maintain huntable deer and elk populations in forest climax areas, we must learn how to replace, artifically, the ranges that are being lost naturally. To eradicate the trees deliberately, either by cutting or controlled burning, solely for the benefit of game, is not economically feasible. Therefore, effective habitat improvement must be a by-product of a large-scale activity which is inexpensive, or even profitable. Timber harvest by "logging" seems made to order.

However, merely removing the trees from an area does not assure that it will become useful game range. If the area is too high or on a north slope, snow depth will preclude its use as winter range. If there are no living remnants of palatable forage plants present, the area may grow up to trees again before ever becoming a productive game range. Even if forage is increased, will game be allowed to use it? The increased disturbance and hunting pressure brought in by logging road traffic may offset the benefits of a better food supply.

That game forage can be increased by timber harvest is shown by the results of various studies. One western Montana study area is on Tamarack Creek near St. Regis. There, a 100 acre area within the winter range zone was clearcut during the 1966-67 winter, and burned in the fall of 1967. Palatable browse plants were counted and measured on study plots the fall before logging and again during the first summer after burning. It was found that evergreen **Ceanothus** increased from 0.4 plants per plot before timber harvest to 140.5 seedlings per plot after logging and burning. This is particularly significant since studies at Rattlesnake Creek near Missoula showed that evergreen **Ceanothus** comprised 65 per cent by volume of the winter food of mule deer. Observations in other areas of western Montana show that this browse species is also an important winter food of elk and white-tailed deer.

Studies such as these are of the utmost importance in western Montana. The future of many of our elk and deer herds depend on them. When sufficient information is obtained, habitat improvement practice can be combined with timber harvest methods to provide improved ranges for elk and deer.

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YES—THERE ARE BULLFROGS IN MONTANA

By Jeff Black, University of Oklahoma
Photos By Author

Ed. Note. The high jumping, tasty bullfrog would probably have remained little more than a gourmet's delight had it not been for Samuel Clemens, alias Mark Twain. Mark Twain elevated the status of the bullfrog when he wrote "The Notorious Jumping Frog of Calaveras County," though he did say of the frog, Dan'l Webster, "You never see a frog so modest and straight-for'ard as he was, for all he was so gifted." Dan'l was a high jumper but blew one of his biggest contests after being loaded with a teaspoon full of bird shot.

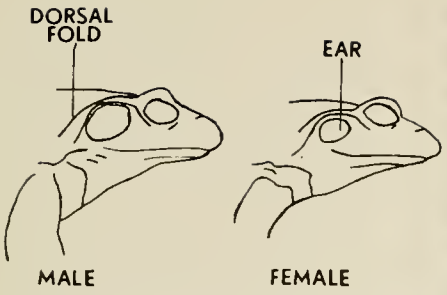
For years now there has been an annual frog jumping contest in Calaveras County, California. The most talented and athletic amphibians that can be found are touted in the finer arts of jumping so they can represent the governors of various states without embarrassment. Now, Montana has never been represented at one of these contests possibly because most persons believed that the state was wholly lacking in bullfrogs. It is not that Montanans have suffered any undue hardships, but they have suffered some from the veiled sarcasm of competing states and the press has made pointed statements about our puny croakers.

But now a former Montanan, Jeff Black, has come to our aid and we can no longer be made light of because of our froglessness. Perhaps, croaking away in some weedbound Montana pond is a bullfrog that could outjump even Dan'l Webster.

The bullfrog **(Rana catesbeiana)** is the largest frog in the United States and is by far the most famous of the frog leg species. It is also well known for its jumping ability in frog jumping contests and the "Frog Olympics" in California. It gets its name from the deep call of the males which to some people resembles the bellowing of a bull. Because of its eatable legs, the bullfrog has been introduced and is established in virtually every part of the United States. It is protected by law in some states.

The bullfrog was not reported from Montana until 1968 and was

The patterned area of the map shows the known range of the bullfrog in Montana, though they are likely to be found in other areas also.



These drawings of male and female bullfrog heads show difference is size of the ears according to sex of the frog. Note the dorsal fold which helps identify this species.

This is an adult bullfrog. Note the short dorsal fold which begins on the head and bends downward just behind the ear.

Note the large size and numerous circular spots on this bullfrog tadpole. The numerous circular spots will distinguish this tadpole from those of other species.

supposedly introduced into the Bitterroot Valley of western Montana about 1920. It appears to be presently restricted to ponds along the Bitterroot River from south of Hamilton, Ravalli County, north to Florence, Ravalli County, though transplants to other areas are suspected. Eggs of the bullfrog have also been collected in a large pond, 4 miles south of Plains, Sanders County. This frog is to be expected in any permanent water in Montana and is probably present in many parts of the state.

The bullfrog is our largest frog and may attain a maximum snout-to-vent length of about 8 inches. It is plain or nearly plain green above, or with some gray or brown markings on a green background. The skin may be roughened with small tubercles. The venter is whitish and may have a yellowish wash, especially on the throats of adult males. The bullfrog has short dorsal folds which begin on the head and bend downward just behind the ear. The ear is twice as large as the eye in males and the first finger may be short and swollen in breeding males.

Tadpoles of the bullfrog are very large and may attain total length of 6 or 7 inches. The dorsal surface of the tadpole body is greenish-olive and is distinctive in having the whole dorsal and lateral surfaces including those of the tail and body dotted with small circular dark spots.

During the breeding season, adult males may establish breeding territories which are actively defended from other males by aggressive behavior. These territories probably increase the male bullfrogs' chance of successful mating. The voice of the male is well-developed and is deep pitched, hoarse, and bellowing.

In Montana most breeding occurs from April to July, depending upon the temperatures. The eggs are typically laid in a large floating raft in quiet water and hatch in about 4 or 5 days according to temperature. The tadpole stage may last for three years and sexual maturity is reached at an age of four or five years. Bullfrogs have been known to live for 16 years.

The bullfrog prefers deeper water and within its range is common in larger streams, rivers, ponds, lakes and swamps. They are closely restricted to water.

This frog is a good swimmer and jumper with adults covering 4 to 6 feet at a leap. One only has to try and catch a bullfrog to find that these abilities are not exaggerated. Adults and tadpoles hibernate during the winter, but tadpoles are often killed in Montana when the water freezes for some length of time.

The bullfrog is well known for its apparent readiness to eat whatever it can get. It has been described as a voracious, omnivorous and carnivorous species. They are known to eat everything from small fish to birds and any other animal that is small enough to be captured and swallowed.

The bullfrog appears to be having an effect on populations of the leopard frog **(Rana pipiens)** and the spotted frog **(Rana pretiosa)** in the Bitterroot Valley. Nearly all suitable ponds are now occu-

pied solely by the bullfrog. Mild winters enable the bullfrog to extend its range and occupy the habitat of the other frogs. Because of this competition in parts of the Valley, the leopard frog seems to be disappearing, while the spotted frog is still occupying permanent water at higher elevations.

SPORTSMEN—NO LITTERBUGS

Vindication for the sportsman concerning littering came recently from statistics gathered by Keep America Beautiful, Inc. Of all categories of people using the outdoors, sportsmen were the least offenders with litter. They were responsible for only five per cent of the litter in rural areas investigated. Picnickers were responsible for 25 per cent and passing motorists for 70 per cent.

The bullfrog will eat anything it can capture and swallow. This bullfrog is eating a red-winged blackbird.

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